

X.—On drying Plants for the Herbarium by means of a Deliquescent Salt. By J. J. MURCOTT, Esq.\*

THE plants to be dried are placed between sheets of paper containing chloride of calcium, contact with the salt being prevented by an intervening cushion on one side, and a layer of fine calico on the other. Two thin boards support the apparatus, and are held together by a couple of buckled tapes; the whole is enveloped in oil cloth to exclude atmospheric moisture. The packet need not be opened till the plants are dry enough to be removed, or fresh plants require to be introduced. The time and trouble of frequently removing drying plants into fresh papers, as in the ordinary method, are both saved; for though the packet be full of plants, it need not be opened even for several months. Plants in general dry much faster than in blotting-paper, and their colours are much more frequently preserved: the use of the pad prevents injury to the soft parts of plants, and hinders their corollas from shrivelling up in drying, without applying so much pressure as would unfit any part for subsequent examination.

Brown paper, so thick as to prevent the transmission of light, with a smooth surface, and not much sized, is better fitted to hold the salt than blotting-paper, which it greatly surpasses in durability and tenacity in a damp state. The paper is impregnated with the salt by dipping it (a sheet at a time) in a solution formed by dissolving  $13\frac{1}{2}$  oz. of the crystallized chloride of calcium in one (imperial) pint of water. Where the chloride is expensive, or difficult to be procured, it may be prepared by saturating hydrochloric acid with fragments of marble, or even with common chalk: the acid may be of commercial strength or slightly diluted with water; but the vessel containing it should be capable of holding several times the quantity, on account of ebullition. After saturation the liquid should be filtered, and diluted with water till its specific gravity falls to 1.188; this may be ascertained most readily by a glass bead of that number. The sheets as they are dipped (a large tea-tray is very convenient to hold the liquid) should be carefully laid one upon another, and at length so much liquid pressed out that they will not drip when held before a fire to dry. I dry them before a fire, but a friend suggests that much time and trouble would be saved by drying them in a baker's oven. A solution of this strength will communicate as much of the salt as the paper can retain without showing an exudation on its surface when applied to use and its complement of moisture absorbed, while the excessive brittleness occasioned, if the liquid be much more concentrated, soon splits the back of every sheet; and the drops of liquid that appear as the paper grows very damp might deter a beginner from following the method.

In applying the paper to use, I place about three sheets between every lot of plants: the plants do not touch the paper but lie on a cushion of cotton wool, and are covered with a piece of 'glazed lining' calico, or similar material; or they are placed between two

\* Read before the Botanical Society of Glasgow, November 1842.

pieces of flannel; of course the same surface of the cotton or flannel should always be applied to the paper, to prevent communication of the salt to the plants. I have prepared some sheets of paper on one side only, but have not yet given them a trial. The pads do not much affect the quick drying, but they preserve soft parts from injury, and render a very slight pressure sufficient. When I wish to preserve the corolla of a plant in the best possible manner, I place under and above it a little finely opened cotton wool. When very watery plants are to be dried, such as *Hottonia palustris*, I would place an extra cushion of cotton wool over them. Plants seem to dry best at a temperature of about 100° F. When the papers have taken up as much moisture as they can absorb, they may be re-dried before a fire, if the method suggested by a friend (drying at a baker's oven) should not be accessible. *Orchidaceæ* and *Scrophulariaceæ* are bad driers even with the aid of chloride of calcium; but I find that *Listera ovata*, and probably some others, may have their colour perfectly preserved if immersed for a few seconds in a nearly boiling but very weak solution of carbonate of soda, then wiped and placed between the papers. This remark may perhaps induce some one with more leisure than myself to experiment on various ways of drying plants of these natural orders.

The disadvantages of the method are in my opinion inconsiderable when compared with the saving of time and trouble, and the much better preservation of the specimens. Brown paper is not expensive. Crystals of chloride of calcium may be bought of the Liverpool Apothecaries' Company, and perhaps elsewhere, at 5*d.* per lb.; or if prepared at home, the expense will be about the same. The cotton-wool cushions cost 1*d.* or 1½*d.* each; flannel is more durable, but more expensive. The cushions render the apparatus bulky, but this is only an inconvenience in travelling, and then the far greater inconvenience of drying papers at inns in the summer months is experienced about once in three weeks instead of once a day, or every other day. Such at least is the result of my experience; I have employed the salt in the manner described for two years and part of a third, for I commenced with it in 1840. The great dryness and consequent brittleness of the plants unfit them for the immediate examination of concealed parts, but exposure to a moist air for a short time would diminish their fragility in a sufficient degree.

Suppose some plants dried, whose colours are lost in the usual mode of drying, for instance the Campanulas: will they keep their colours after removal from the drying papers, and exposure continually to a moister air? I can scarcely answer the question, for my herbarium is kept artificially dry by means of the salt employed to dry the plants in the first instance. Some specimens, however, communicated to a friend four months after drying, lost their colour in his possession, while nearly twelve months later, specimens of the same plant, brought from the same place, at the same time, and dried in the same manner, were unaltered. The latter were in my herbarium, and the air within was much drier than the air outside. The best method I have thought of to keep a cabinet artificially dry, is by

having a cavity of about an inch at the back of the shelves (two cross bars might prevent the plant-holding papers from being pushed too far back) with a lid at the top, and sliding in one or more frames supporting Welsh Plane well dosed with the chloride and dried; gun-wadding prepared might perhaps do as well, but I have not at present tried either material. A servant might occasionally take out, dry, and replace the slides without having access to the plants.

One unconnected remark and I have finished: my vasculum is provided with a canvass lining, which I take care to have well-wetted in warm weather, to supply much of that moisture that would otherwise diffuse into the air from the contained plants alone. It is further provided with a covering of canvass to be used only in hot sunshine when it is wetted to keep the box cool by evaporation from its surface.

Woodloes, near Warwick, November 1842.

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XI.—*On the relative position of the Divisions of Stigma and Parietal Placentæ in the Compound Ovarium of Plants.* By ROBERT BROWN, F.R. & L.S.\*

To estimate correctly the importance of the relation between the divisions of the Stigma and the parietal placentæ of the compound ovarium, namely, whether when agreeing in number they are placed opposite to or alternate with each other, it is necessary to take into consideration the theoretical view which appears the most probable of the origin or formation of a simple ovarium, and that of the stigma belonging to it, as well as the various kinds and degrees of confluence by which the real nature of both organs, but especially the latter, is so often obscured.

It is at present, I believe, universally agreed to consider a polyspermous legumen as that state of the simple ovarium, which best exemplifies the hypothetical view of the formation of this organ generally adopted; namely, that it consists of the modification of a leaf folded inwards and united by its margins, which in most cases are the only parts of the organ producing ovula; or, at least, where this power of production is not absolutely confined to the margins, it generally commences with or includes them.

The exceptions to the structure as here stated are of two kinds:—

First. Where the whole internal surface of the carpel is

\* This article, which is referred to at p. 255 of No. 65, is extracted from Mr. Brown's account of *Cyrtandrea*, given in the second part of Dr. Horsfield's 'Plantæ Javanicæ Rariores,' published in 1840. Separate copies of this article were distributed in December, 1839.